



GES DISC

Preparations to Support Future Missions





Preparations to Support Future Missions

- Mission Support Timeline
- GES DISC Core Components
- Known Missions
- Work with GSFC MDL
- Data System Cost Modeling
- Discussion



Mission Support Timeline

- **3 years prior to launch - Begin mission planning meetings, specify data system requirements, identify key system capabilities**
- **2 years prior to launch - Document interface agreements, collect algorithm and data documentation, compose initial data system specification**
- **1.5 years prior to launch - Procure initial system hardware**
- **1 year prior to launch - Procure full operations system hardware, update data system specification as necessary, system integration, and science software integration***
- **8 months prior to launch - Begin full system testing**
- **4 months prior to launch - Begin end-end testing; Continue to run test data through system, apply science software updates as necessary***
- ***Launch***

** Where appropriate*



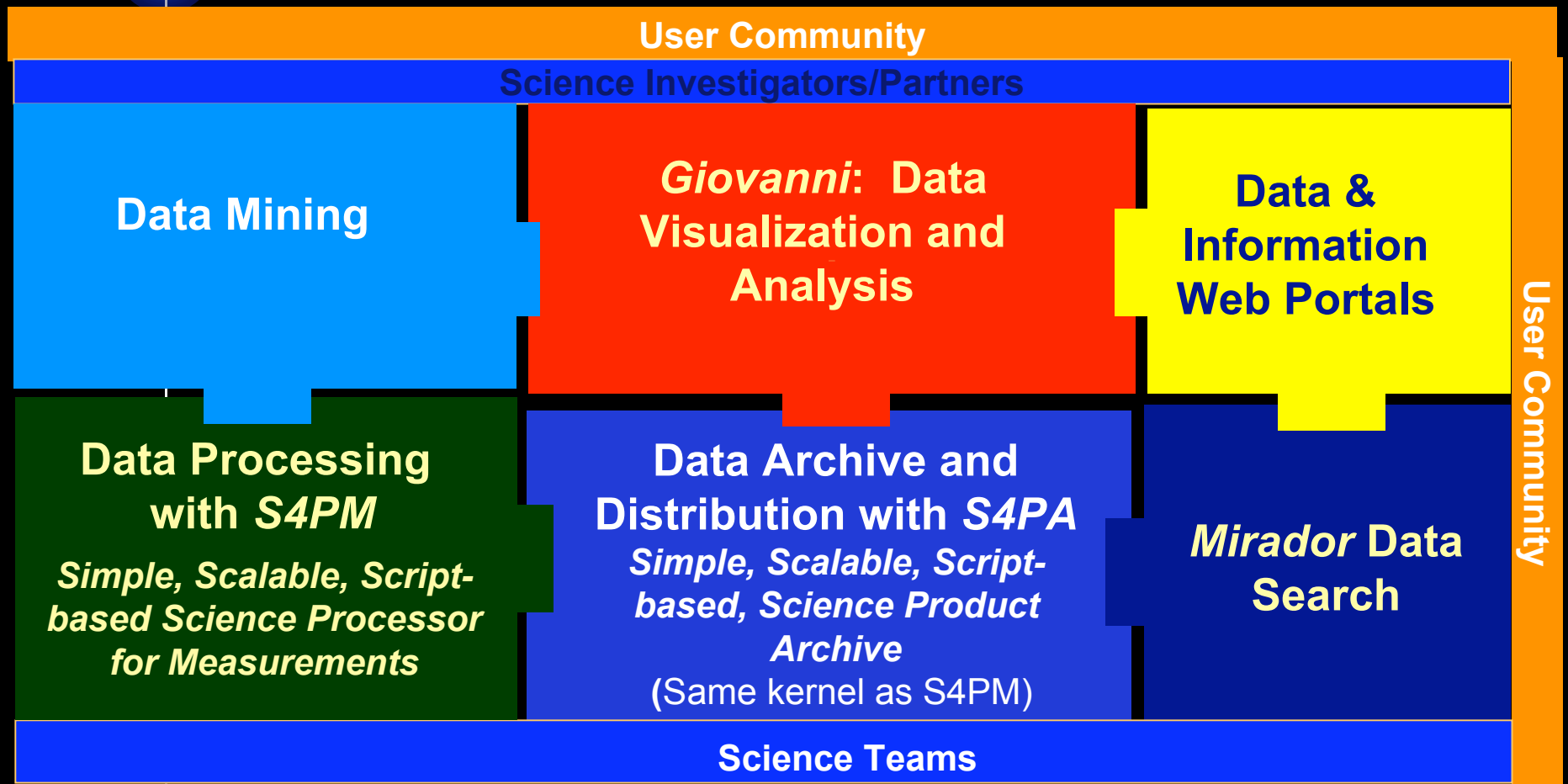
Mission Support Timeline

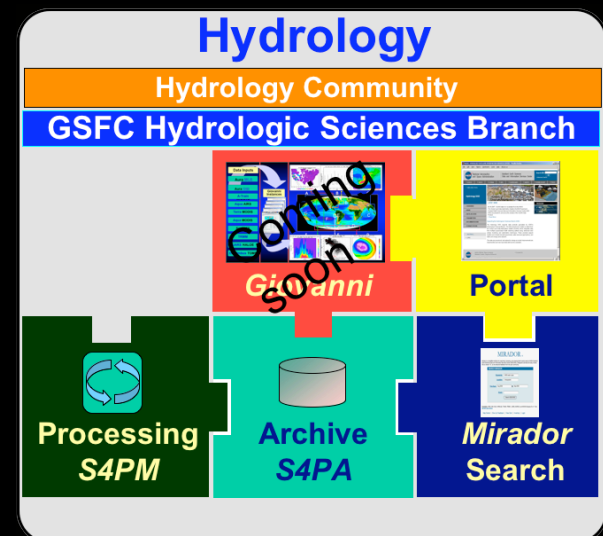
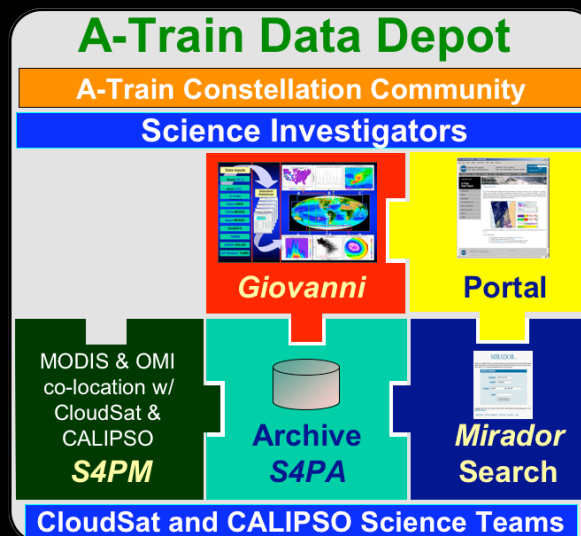
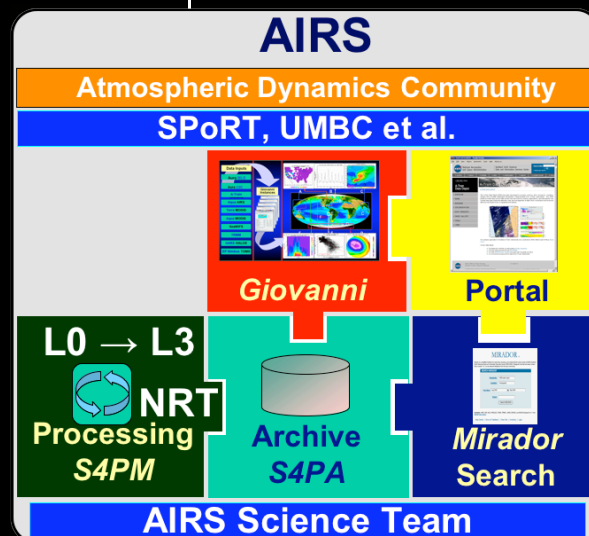
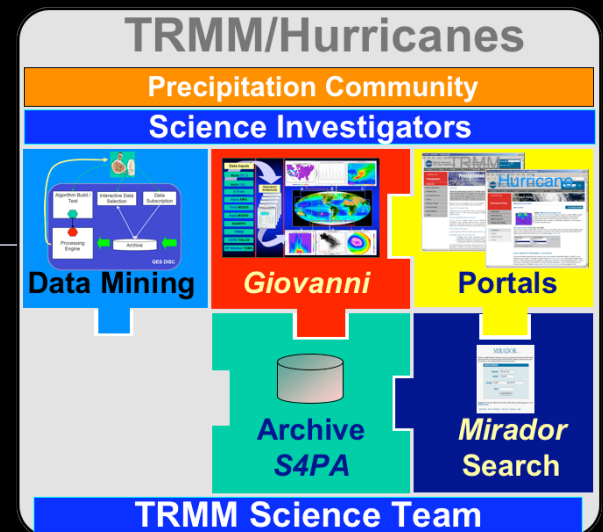
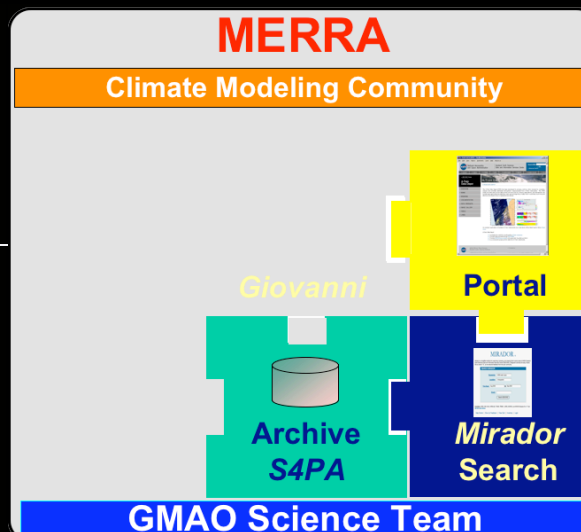
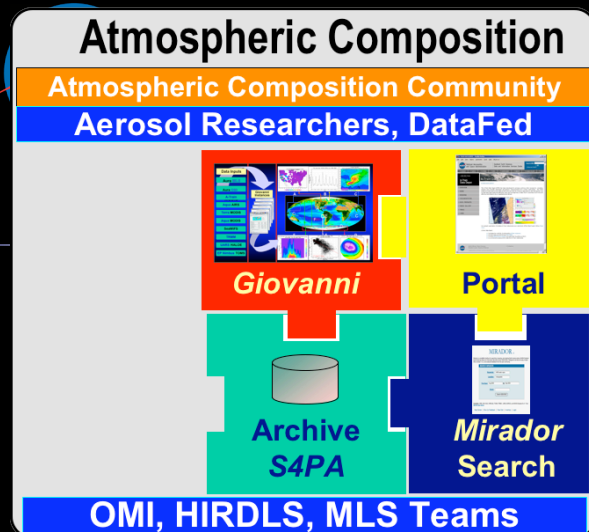
- *Launch*
- **With first data - Support launch and early checkout**
- **During life of mission - Ingest, archive, distribute data, provide user services, process/reprocess data***
- **For 3 years beyond the End of Mission – Reprocess*, ingest, archive, distribute data, provide user services**

** Where appropriate*



GES DAAC Core Components

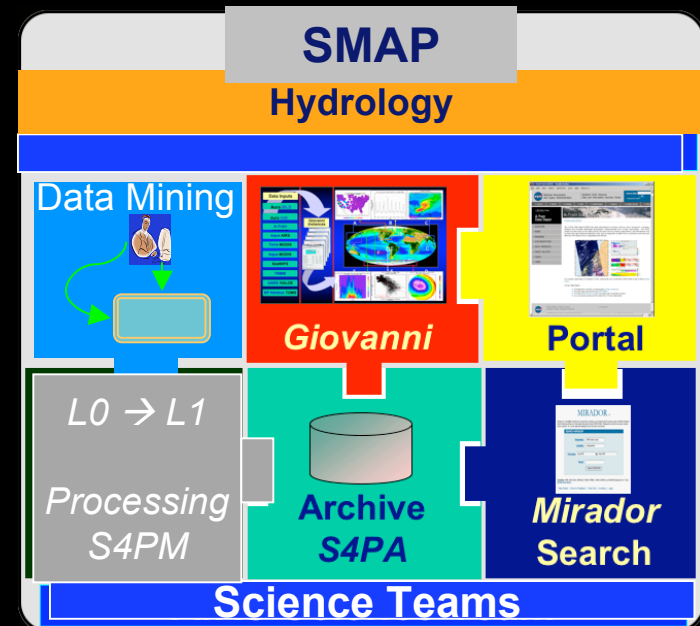
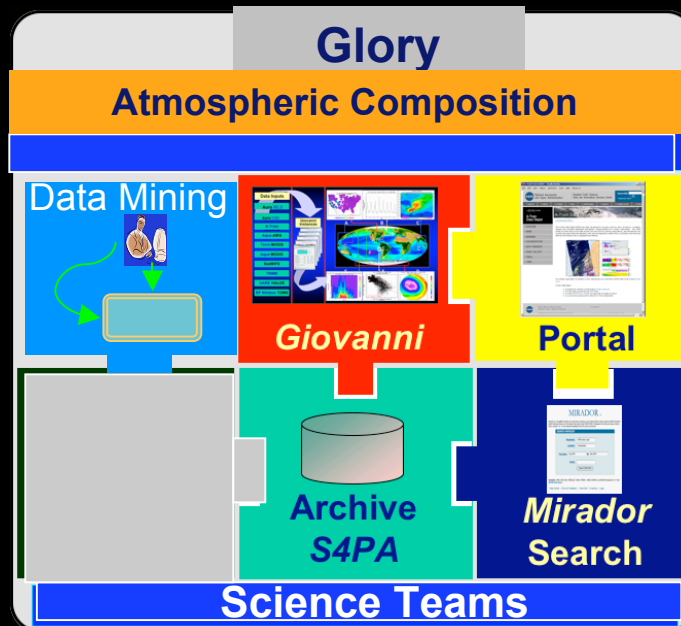




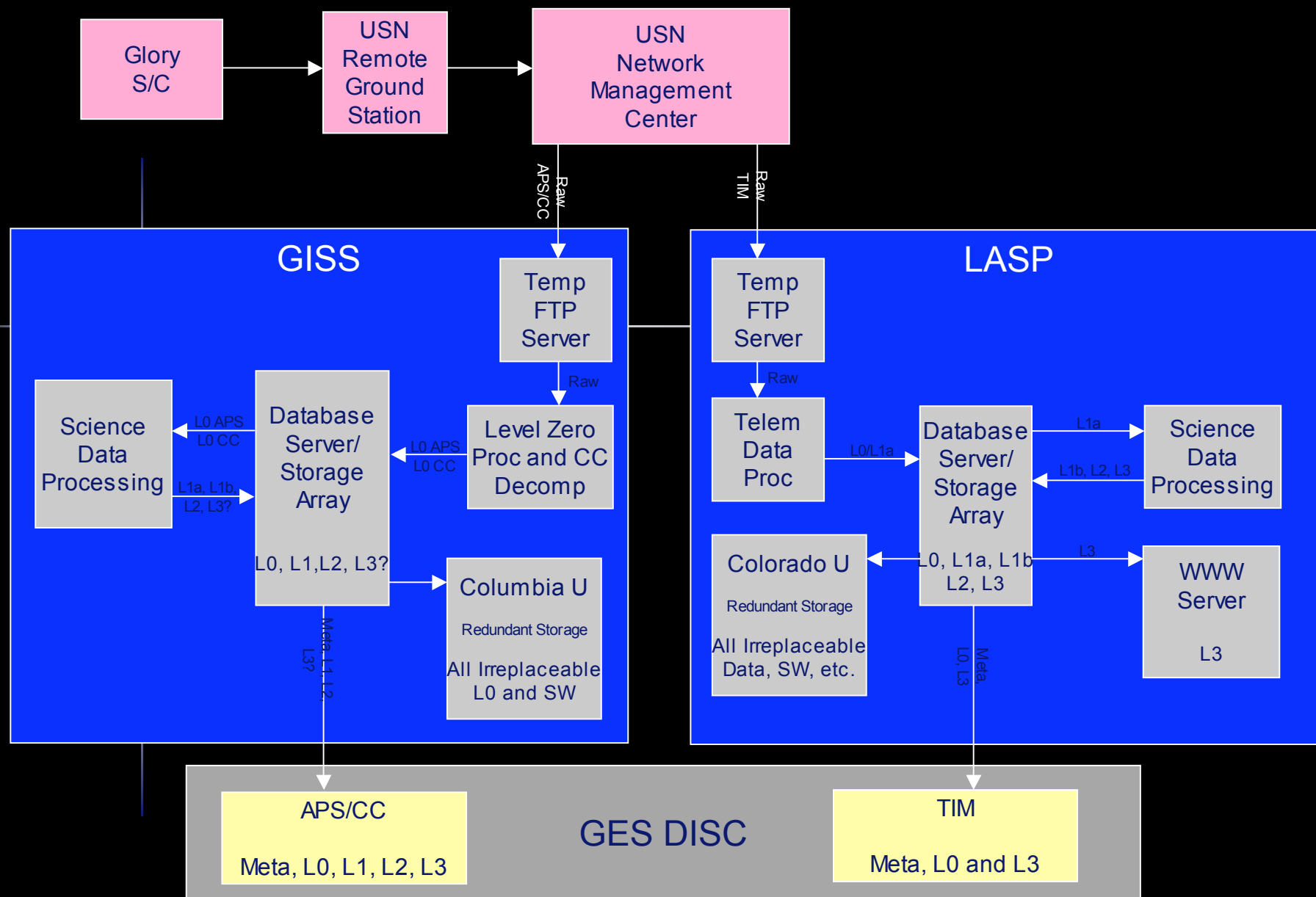
Implementations of Core Components

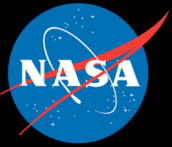


Known upcoming Missions that will be benefiting from reusing data management tools



Glory Science Data Product Flow





Missions Supported to date by the GES DAAC in the GSFC Mission Design Lab (MDL)

| <u>Instrument</u> | <u>Dates</u> | <u>Data System Notes</u> |
|-------------------|------------------------------------|--|
| DESDyni | 26-29 January 2009 | <i>First Study Lidar only portion of mission Cost based on previous GES DISC missions and experience</i> |
| CASS | 9-13 February 2009 | <i>Chemical Aerosol Solar Satellite First Utilization parametric cost model with MDL and GES DISC</i> |
| ST2020 | 23-27 February 2009 | <i>First space science mission considered Cost based on cost model for hardware and JWST estimates for everything else</i> |
| Nightsat | 23-27 March 2009 | <i>Mission to study night time light emissions First time including science software development option in cost model</i> |



Science Data Management Cost Drivers

- **One of the byproducts of working in the MDL was the development (and continuous refinement) of a parametric model for estimating science data management costs.**
- **Cost Drivers include:**
 - Length of mission
 - Number of external interfaces
 - Data volume, number of data products
 - Science processing software computing requirements
 - Number and complexity of science processing software executables
 - Number of users
 - Number of science team members
 - Level of data and user services



GES DISC Reusable Science Data Management Tools

- For small or big projects (or missions), the GES DISC can quickly *assemble* a customized, scalable science data management system including:
 - science processing with S4PM
 - a dedicated archive (S4PA)
 - search services provided by Mirador
 - parameter and spatio-temporal subsetting
 - a dedicated online visualization and analysis system (Giovanni)
 - a dedicated Data Mining system
 - a web portal to provide access to the above



Discussion

For GES DISC long term planning, what would the UWG recommend to better prepare for the formulation and/or development of new missions?